2013 Maryland FMP Report (July, 2014)
Section 20. Weakfish (*Cynoscion regalis*)

Chesapeake Bay FMP

Weakfish stocks coastwide are depleted and have not responded to reductions in fishing mortality. Total mortality remains high while natural mortality has increased. The Chesapeake Bay Weakfish and Spotted Seatrout Fishery Management Plan (CBFMP) was adopted in 1990 to enhance and perpetuate the Chesapeake Bay's weakfish and spotted seatrout stocks. Since then, the plan was revised in 2003 and addresses weakfish alone. The revised plan was developed in response to the improvement in the status of the weakfish stock from overfished (below a threshold) to fully exploited (fished at MSY) and included new biological data pertinent to the Chesapeake Bay. The CBFMP follows the compliance requirements set forth in the ASMFC Amendment IV to the Interstate Weakfish Management Plan (2003) and several addenda (2006-2009). Maryland is required to submit annual compliance reports to ASMFC for each species.

The CBP plan was reviewed by the Maryland DNR Fisheries Service (FS) weakfish and spotted seatrout plan review team (PRT) in 2012/2013. A draft report was presented to the Tidal Fisheries Advisory Committee and Sport Fisheries Advisory Committee as part of the plan review process. The PRT recommended no changes to spotted seatrout or weakfish allocation, but a need for additional socioeconomic data. More information can be found in the draft document at: http://dnr.maryland.gov/fisheries/calendar/events/473/h_weakfish_spotted_sea_trout_weakfish_fmp_review_may_6_%202013.pdf.

Stock Status

Since 2009, the Atlantic coastwide weakfish stock has been considered depleted rather than overfished. The term "depleted" is used when factors other than fishing mortality have resulted in a biomass decline. The most recent peer-reviewed stock assessment was completed for the Atlantic coastal stock in 2009. The stock spawning potential was estimated at 3% of an unfished stock. Since 1995, the decline in biomass has been due to a sustained increase in natural mortality and not from an increase in fishing mortality. The increased natural mortality was exacerbated by continued removals by commercial and recreational fisheries. Maryland's fishery dependent and independent monitoring has shown both a decrease in mean adult age and low juvenile abundance. The ASMFC Weakfish Management Board adopted new percentage-based spawning stock biomass biological reference points (BRPs) in November 2009. The spawning potential threshold was set at 20% and the spawning potential target was set at 30%. Despite changes to reference points, the depleted weakfish stock is unlikely to recover quickly .[1] The next benchmark stock assessment is scheduled to be completed in 2015. A data workshop will be held in 2014.

Current Management Measures

Management measures implemented by ASMFC's Addendum IV required a 60% reduction to commercial and recreational exploitation. It resulted in requiring states to implement a 1 fish recreational creel limit and a 100 pound commercial trip and bycatch limit. Chesapeake Bay Program jurisdictions implemented new restrictions in 2010 to meet or exceed the ASMFC requirements on harvest and bycatch. These restrictions continued through 2013.

Fisheries

Both recreational and commercial harvests of weakfish have significantly decreased over the last decade (Figures 1 & 2). The recreational harvest was estimated to be 1,851 fish in 2013, but the high proportional standard error (PSE) of 89.1 indicates in this estimate is imprecise. The recreational fishery is largely catch-and-release. An estimated 10,367 fish were released in 2013, although the PSE of 52.6 also suggests imprecision. The declining harvest trend began in 1989. Since 2002, Maryland commercial weakfish landings have been below 100,000 pounds, and as low as 223 pounds (2011). Preliminary Maryland commercial landings data indicate 3,158 pounds of weakfish caught in 2013 (Figure 2), of which 247 were reported from Chesapeake Bay. A similar decreasing trend has been seen in other states along the Atlantic coast.

Issues/Concerns

Factors such as predation, competition, and environmental changes, have increased natural mortality and appear to have a stronger influence on weakfish stock dynamics then harvest. Production of weakfish juveniles is not leading to high adult biomass.[1] The ASMFC Weakfish Management Board "received a significant amount of public comment supporting a coastwide moratorium". The ASMFC Board chose to implement restrictions that would allow for limited directed fishing and allow sampling programs to continue.

The ASMFC weakfish plan review team has reported its recommendations for management, biological research, social and economic research, and habitat studies.[1] Biological research recommendations were listed under high, medium, and low priorities. High priority recommendations include catch and effort data, discard mortality rates, age validation, stock identification and movements, spatial and temporal analysis of the fishery, and analysis of the spawner-recruit relationship and environmental influences on year-class strength.[1] The ASMFC Weakfish Management Board reviewed the 2013 stock status indicators and concluded that the stock remains at low levels.[2]

Figure 1. Maryland's estimated recreational weakfish harvest and releases in numbers, 1981-2013.[3]

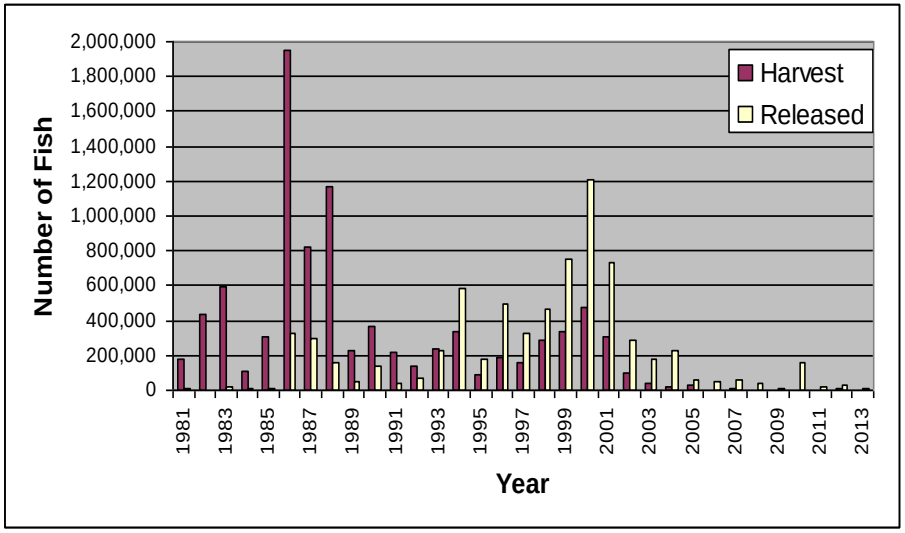
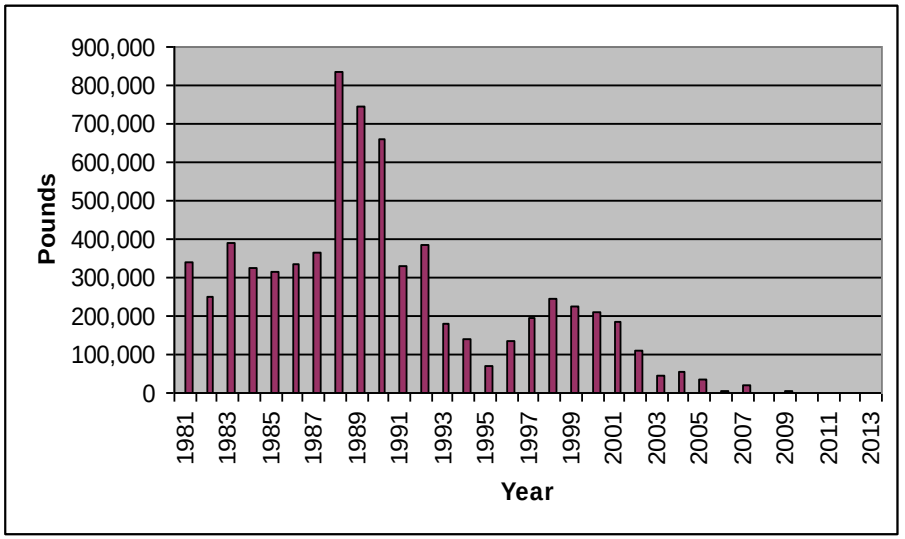


Figure 2. Maryland's total commercial weakfish landings, 1981-2013.[3]



References

[1] ASMFC. 2012. 2012 Review of the Atlantic States Marine Fisheries Commission Fishery Management Plan for Weakfish (*Cynoscion regalis*) 2011 Fishing Year. ASMFC Board Approved October 23, 2012. 25p

[2] ASMFC 2014 Winter Meeting Summary, Alexandria, VA February 4-6, 2014. p. 10.

[3] Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division April 23, 2014.

2003 Chesapeake Bay Program Weakfish Fishery Management Plan Implementation (updated 7/14)			
Section	**Action**	**Implementation**	**Comments**
Stock Status Management Strategy: CBP jurisdictions will adopt biological reference points (BRPs) that reflect the most current status of the weakfish stock. As data becomes available on multi-species interactions and ecological considerations such as species interactions, food webs, bycatch, biodiversity and habitat, the BRPs should be modified accordingly.	Action 1.1 MD, PRFC (Potomac River Fisheries Commission) and VA will adopt the Atlantic States Marine Fisheries Commission's (ASMFC) recommendations for the coast wide management of weakfish	Annually reviewed and adjusted if necessary	The 2009 assessment results indicated that the weakfish stock is depleted, with SSB estimated at 3% of an unfished stock well below the BRPs adopted in Addendum IV. The biomass decline is the result of increasing natural mortality while F remains low. Size and age structure of the stock has decreased. The ASMFC review team (2010) recommended the development of additional methods to analyze the stock in the next assessment. The 2013 ASMFC Action Plan called for a review of stock assessment modeling efforts. **The ASMFC Weakfish Management Board reviewed the 2013 stock status indicators and concluded that the stock has not recovered and remains at low levels.**
	Action 1.2 In order to achieve the fishing target rates defined by the adopted BRPs, CBP jurisdictions will utilize a combination of size limits and possession limits, and/or seasons or areas to manage the commercial and recreational fishery in state waters.	Annually	ASMFC Addendum IV to Amendment 4 of the weakfish FMP requires that the recreational creel does not exceed 1 fish/person/day in the CBP jurisdictions. Commercial landings must be limited to 100 pounds per vessel, day or trip, whichever is the longer period of time for directed fisheries and bycatch must be limited to 100 pounds per vessel, per day or trip for all non-directed fisheries. The finfish trawl fishery allowance for undersized fish must be reduced to 100 fish. The CBP jurisdictions are in compliance; All met the recreational harvest restrictions and met or exceeded the commercial harvest restrictions. The requirements have remained in effect since 2010.
The FisheryManagement Strategy: The CBP jurisdictions will regulate the commercial and recreational fishery based	Action 2.1 The CBP jurisdictions will consider regional differences when determining state allocation issues and regulations.	As necessary	The Maryland Sport Fish Advisory Commission recommended a weakfish moratorium but no action was taken. Fishing mortality has been decreased over the years but there remains a significant amount of non-fishing mortality
	Action 2.2	Dependent on the	Collection of economic data for the commercial

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on the most recent status of the stock and the established fishing targets.	The CBP jurisdictions will consider the economic impacts of management measures on the fishery and promote the utilization of economic data in the management decision process.	availability of economic data	fishery should include dockside values, the number of commercial vessels, the number of commercial fishermen, and the economic returns from the commercial fishery. Data collection for the recreational fishery should include the number of anglers, the number of directed trips, and angler expenditures. Detailed data collection will enable the development of bio-economic models that can estimate costs or benefits to consumers resulting from fishery regulations.
	Action 2.3 The CBP jurisdictions continue to support the use of BRDs in non-directed fisheries and the appropriate mesh sizes in directed fisheries, to reduce the fishing mortality on small weakfish.	Annually	ASMFC Addendum III to Amendment 4 of the weakfish FMP aligns BRD certification requirements between state and federal waters along with the SAFMC shrimp bycatch reduction device requirements.
The Fishery Research and Monitoring: The CBP jurisdictions will continue to monitor the biological characteristics of the weakfish stock in the Chesapeake Bay and coordinate monitoring activities within the Bay and the Atlantic coast.	Action 3.1 The CBP jurisdictions will continue fishery dependent sampling and improve catch data. Economic information from the recreational and commercial fisheries will also be reviewed.	Continue	Monitoring data provides information on abundance, age structure, and YOY recruitment. **Total commercial landings in MD increased from 1,227 to 3,158 pounds in 2013, continuing the trend of low harvests. Commercial landings in VA are higher than those in MD, but are also at low historical levels. Virginia landings increased from 31,000 pounds to 44,000 pounds in 2012. The MD 2013 recreational harvest estimate fell from 11,401 to 1,851 weakfish, but the PSE of 89.1 indicated imprecision. Virginia recreational fishermen caught about the same number of weakfish as did Maryland fishermen, with a similar. imprecise estimate of only 2057 fish in 2013, the fewest estimated in 30 years.**
	Action 3.2 The CBP jurisdictions will conduct fishery independent sampling and collect data on abundance, age structure and recruitment.	Continue	Amendment 4 to ASMFC's Weakfish FMP stipulates that states, which harvest 150,000 lbs. or more of weakfish, must submit otoliths and fish lengths as data for the coastal stock assessment. The extent of otolith and length data

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			required was revised in ASMFC Addendum I to Amendment 4. In 2012, otoliths were removed from 71 of 93 fish from MD pound net samples. Of the 71, three were age 3, 30 were age 2 and 38 were age 1. The mean juvenile index, from fishery independent sampling in the coastal bays in 2012 decreased from 1.90 in 2011 to 0.46 juveniles per hectare, the second lowest value of the time series. The Chesapeake Bay juvenile geometric mean per tow decreased to 0.46 weakfish/tow in 2012 following three consecutive years of slightly improving numbers. This was the second lowest value of the time series, and far below the time series mean of 3.2 weakfish/tow. **Mean length data and sample sizes for 2013 Chesapeake Bay pound net samples are being analyzed.**
	Action 3.3 CBP jurisdictions will continue to coordinate state activities with the Atlantic Coast Cooperative Statistics Program (ACCSP).	Continue	The ACCSP Coordinating Council approved the Atlantic States Fisheries Data Collection Standards document in May, 2012. This document will be used to direct partner data collection.
	Action 3.4 The CBP jurisdictions will begin to collect and examine stomach contents data and examine the effects of environmental variables upon weakfish growth rates.	On-going	Data from the ChesMMAP Survey, CHESFIMS project may be used to evaluate species interactions and relationships. Results and trends can then be incorporated into CBP fishery management plans. ASMFC weakfish stock assessment (2006) incorporated a striped bass predator function allowing weakfish stock decline to be modeled.

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Habitat Management Strategy: CBP jurisdictions will monitor and regulate activities which may be harmful to weakfish habitat.	Activities, which contribute to the degradation and or loss of habitat types that weakfish utilize throughout their life history stages will be monitored and regulated by CBP jurisdictions.	On-going	CBP jurisdictions support the commitments of the Chesapeake Bay 2000 Agreement. These activities include reducing the discharge of toxic pollutants or excessive nutrients into the Chesapeake Bay and its tributaries, interruption or changes in water discharge patterns, deposition of solid waste, sewage sludge or industrial waste into Bay (which may lead to anoxic conditions), rapid coastal development, unregulated agricultural practices, net coastal wetland loss, or the dredging of contaminated sub-aqueous soils. The CBP developed a new draft Watershed Agreement with new and updated habitat outcomes. For more information see http://www.chesapeakebay.net/
	Action 4.1 The CBP jurisdictions will monitor and regulate land-based activities and water-based activities that may negatively impact Chesapeake Bay water quality and weakfish spawning, rearing and foraging areas.	Continue	The MD DNR water quality protection database focuses on watershed lands that are most important for improving water quality.
	Action 4.2 The CBP jurisdictions will monitor important weakfish forage species to insure that activities, such as directed fisheries or incidental bycatch in non-directed fisheries, do not adversely affect abundance. These managed species, which serve as forage for weakfish include Atlantic croaker, spot, Atlantic menhaden, and blue crab. If fishing activities are contributing to higher F's on forage species, additional management measures may be necessary.	Continue	Data from the ChesMMAP, CHESFIMS, and the MD Winter Trawl Survey will provide data on important forage species for weakfish. The CHESFIMS survey was discontinued after 2005 due to lack of funding.
	Action 4.3 The CBP jurisdictions will monitor the abundance of weakfish forage species that are not managed under CBP FMPs, such as bay anchovies, and Atlantic silversides, using on-going monitoring and surveys.	Continue	The MD Estuarine Juvenile Finfish Survey and VIMS Juvenile Abundance Monitoring Surveys (formerly known as the VIMS Trawl Survey and the VIMS Juvenile Seine Survey) will continue to monitor the abundance of important, non-managed forage species in the Chesapeake Bay.

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Ecosystem Interactions Management Strategy:	Action 4.4 The CBP jurisdictions will continue to identify predator/prey interactions, both inter- and intraspecies competition and other interactions that might affect the management of weakfish. As multispecies interactions are evaluated and quantified, biological reference points and management strategies may be adjusted.	On-going	Data from the ChesMMAP, CHESFIMS, and the MD Winter Trawl Survey will be collected and analyzed by CBP jurisdictions to identify possible inter-and intra-species relationships. ASMFC weakfish TC has incorporated a striped bass predator function into the 2006 weakfish stock assessment to model the weakfish stock decline since 1998. No new recommendations have been developed.

Acronyms:

ACCSP =
ASMFC = Atlantic States Marine Fisheries Commission
BRPs = biological reference points
CHESFIMS = Chesapeake Bay Fishery Independent Multispecies Fisheries Survey
ChesMMAP = Chesapeake Bay Multispecies Monitoring and Assessment Program
CBP = Chesapeake Bay Program
F = mortality due to fishing
FMP = fishery management plan
PRFC = Potomac River Fisheries Commission
PSE =
SAFMC = South Atlantic Fishery Management Council
SSB = spawning stock biomass
TC = technical committee
VIMS = Virginia Institute of Marine Science
YOY = young of the year fish

Spotted Seatrout Notes:

The ASFMC adopted the spotted seatrout FMP in 1984 for states from Maryland to Florida. A Public Information Document (PID) was issued in November, 2009 by the ASMFC for an amendment to the interstate FMP for Spanish mackerel, spot, and spotted seatrout. The ASFMC approved the omnibus amendment for Spanish mackerel, Spot, and Spotted Seatrout August 4, 2011 and a corrected version with Technical Addendum 1a on February 9, 2012 [1]. The omnibus amendment includes recommended measures to protect the spotted seatrout spawning stock and requires a coastal minimum length limit.

The spotted seatrout was included in the original Bay Program Chesapeake Bay *Weakfish and Spotted Seatrout Fishery Management Plan* in 1990. The management plan was revised in 2003 to include only weakfish. Since 1990, there has been no new management plan for spotted seatrout but updates have been completed on a regular basis. The 1990 FMP was reviewed by the Maryland DNR Fisheries Service (FS) weakfish and spotted seatrout FMP PRT in 2012/2013. The draft report of the FS PRT was presented to the Sportfishing and Tidal Fisheries Advisory Commissions. The Tidal Fisheries Advisory Commission recommended no action but the Sport Fisheries Advisory Commission recommended that the Maryland DNR FS consider raising the minimum size limit and decreasing the creel limit. These recommendations will go through the public scoping process.

Stock Status:

A coast-wide stock assessment of spotted seatrout has not been completed because this species is considered to be largely non-migratory. Where assessments have been completed on local stocks (NC, SC, GA, FL), there have been data limitations. Stock status varies by state. The estimated MD recreational harvest has been approximately 10,000 pounds or less for the past 10 years. The 2012 Marine Recreational Information Program (MRIP) estimated that Maryland harvest increased to 6,032 fish and preliminary results showed a decline to 0 in 2013. The fishery has become increasingly catch-and-release, and the estimated number of released spotted seatrout was 55,183 in 2012, declining to 8,307 in 2013. The VA recreational fishery caught an estimated 554,000 spotted seatrout in 2012, of which 428,000 were released. Preliminary estimates from VA for 2013 are nearly 346,000 caught, of which 291,000 were released. Maryland harvests have averaged approximately 10% of VA commercial harvests in most years. Virginia commercial harvest of spotted seatrout has varied from a low of 3,773 pounds in 2001 to a recent high of 115,537 pounds in 2012. The most recent commercial reports from 2012 indicate that only 1,801 pounds were harvested from MD.

Management Objectives and Measures:

The ASFMC FMP includes maintaining a spawning potential ratio of 20% or greater to reduce the opportunities for recruitment failures. A size limit of 12" minimum total length is required. All states have complied with this minimum. Net mesh sizes corresponding to this size limit for directed fisheries, data collection, and state stock assessments were also recommended. MD and VA have 14" recreational size limits with a 10 fish creel limit. Virginia closed its recreational fishery from March 1 through July 31, 2014 to protect the spawning stock and increase yield in the fishery. The MD commercial size limit is 12" with minimum 3-3/8 inches trawl and 3 inch stretched gill net meshes (the same mesh size restrictions apply to weakfish). The VA commercial hook & line limit is 14" with a 10 fish limit from April 1 through November 30 and 5 fish from December 1 through March 31 within an overall quota of 51,104 pounds.

Figure 1. Commercial spotted seatrout landings reported to Maryland DNR, 1950-2012. [2]

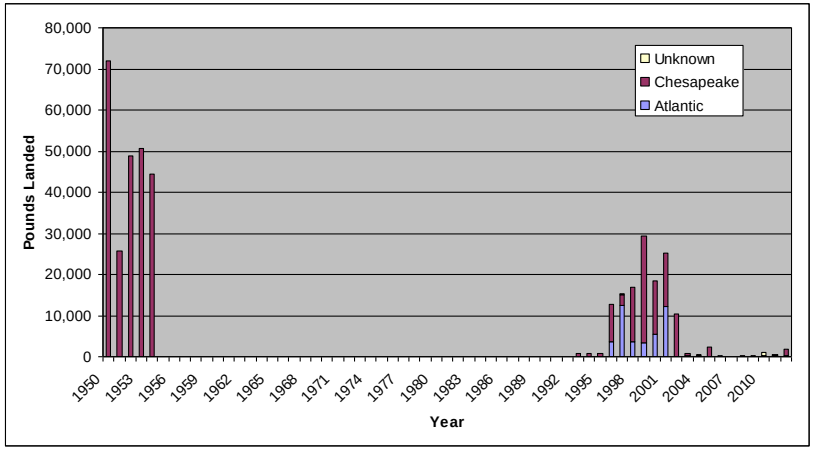
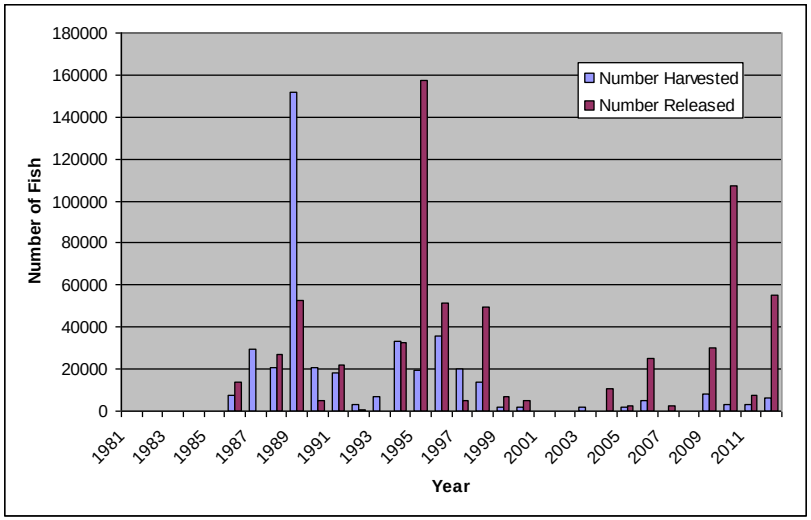


Figure 2. MRIP harvest and release estimates for spotted seatrout in Maryland, 1981-2012.[2]



References:

[1] ASMFC. 2012. Fishery Management Report of the Atlantic States Marine Fisheries Commission. Omnibus Amendment to the Interstate Fishery Management Plans for Spanish Mackerel, Spot, and Spotted Seatrout. Approved February 9, 2012. 161 p.

[2] Rickabaugh, H.W. Jr. 2013. Maryland Spotted Seatrout (*Cynoscion nebulosus*) Compliance Report to The Atlantic States Marine Fisheries Commission – 2012. Maryland Department of Natural Resources Fisheries Service. August, 2013. 9p.